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April 13, 1973

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ABSTRACT

A central incentive-motivational state has been proposed as an internal construct which becomes conditioned to incentive-motivational stimuli in a work environment and influences a wide variety of responses, including self-report measures of satisfaction. Using three financial reward manipulations, 135 undergraduates performed a simple repetitive task and were either (a) rewarded, (b) nonrewarded, or (c) their rewards were unknown at the time they were asked to complete a set of semantic differential scales. Rewarded Ss reported not only greater satisfaction with pay and general affective tone than nonrewarded Ss but also reported greater satisfaction with fellow workers, the supervisor, and the task. The postulate that a central incentive-motivational state can be conditioned by an organizational reinforcer and subsequently influence attitudes regarding various other organizational stimuli was generally substantiated, especially for stimuli associated with affective feeling regarding a responsible reinforcing stimulus.

An important question to those individuals who administer organizational reinforcers is whether an increase in satisfaction with one's pay will cause an increase in satisfaction with other work related attitudes. Can financial incentives be used to alter attitudes towards one's supervisor, fellow workers, or job? Can improved working conditions or an enriched job create more favorable attitudes regarding one's supervisor and top management?

These questions are similar to the questions which have been asked regarding attitude formation and change. Can telling a debater that he has won increase his belief in the viewpoint he advocated in the debate? Can rewarding a child while he is in the presence of other children influence his attitude toward the others? Can experiencing a reinforcing event at about the same time as having been exposed to successive opposing arguments on a controversial issue shape one's attitude toward the issue?

There is evidence to suggest that the answer to all of these questions is yes. Scott (1957) had pairs of University of Colorado undergraduates defend positions diametrically opposite to their beliefs. He evaluated the quality of the presentations by means of a rigged audience vote. Winners, he found, changed their opinions in the direction they debated significantly more than either losers or nondebaters. Lott and Lott (1960) have found that rewarding a child while he is in the presence of other children can influence his attitude toward the others. Groups of children played a game where the object was to land cardboard rocket ships on planetary objectives. One effect of winning the game was to reinforce the winner's positive attitudes toward other children in the group. A series of studies by Rosnow (1965, 1968) and Rosnow and Russell (1963) suggests that experiencing a reinforcing event

at about the same time as having been exposed to successive opposing arguments on a controversial issue can shape one's attitude toward the issue. The reinforcing events consisted of being told that a low exam score would not contribute to one's grade or that one's arguments for or against an issue were better than average. The punishing event was a surprise quiz or being told that one's arguments were worse than average. They found that opinions tended to change in the direction of arguments that occurred closer in time to a reward or farther from a punishment.

These results are consistent with Thorndike's (1933) spread of effect, which postulates that a reinforcement can influence both the stimulus-response connections which immediately precede it as well as those which occur immediately after the reinforcement. Thorndike interpreted the results from a series of 13 experiments as evidence for his assertion that the bolstering effect of reward or "satisfying state of affairs" could spread forward and backward in time, "spreading its influence out upon the connections of the system, and influencing one most, its nearest neighbors next most, and so on [p. 67]." The methodology of Thorndike's experiments have been criticized and defended and alternative hypotheses have been proposed (reviewed by Hilgard, 1956; Marx, 1956; and Postman, 1963). However, it is generally conceded, as Postman (1963, p. 397) concludes, that "the basic propositions of Thorndike's theory have weathered with considerable success both theoretical critiques and attempts at experimental refutation." If one takes the position that job satisfaction is a set of attitudes comprised largely of affective components then Thorndike's spread of effect suggests that a change in the reinforcing properties of one

work related aspect would cause a change in attitudes regarding other aspects of job satisfaction. The amount of change on any specific aspect would depend upon the "nearness" of that aspect to the particular reinforcement.

It has been suggested by Scott (1967) that there are at least two conceptualizations of job satisfaction: the attitudes-toward-things approach and the individual-organic approach. In the attitudes-toward-things approach, job satisfaction is usually assumed to be comprised of affective reactions to specific external referents. Some evidence supports the notion that job satisfaction is a multidimensional construct and that some dimensions are possibly independent, depending on how they are measured and defined and, hence, can be independently manipulated (Graen, 1969; Hinrichs, 1968; Kahn, 1960; Katz, Maccoby, and Morse, 1950). For example, one of the major conclusions stated by Kahn (1960) after extensive research on job satisfaction and productivity was that job attitudes are independent. "We dropped from out empirical research and from our theoretical formulations the concept of morale as a sum of satisfactions realized in the work situation. This we did on the grounds that the factor analysis had shown, and the results of the previous study also suggested, that the several dimensions of satisfaction were quite independent, both with respect to their determinants and in their consequents [p. 286]." Based upon a factor analysis of his data and a review of other studies, Hinrichs (1968) has similarly concluded that employees are able to reliably differentiate among and express their attitudes toward distinct components of their employment situation. Thus, he maintained that attitudes related to various dimensions of the job environment were independent. One might question the conclusion

that job attitudes are entirely independent, however, without disregarding the results of Kahn and Hinrichs. Morale, as the sum of satisfactions realized in the work situation, would indeed be a rather meaningless composite measure which would be difficult to interpret. And finding that employees are able to reliably discriminate and express their attitudes toward distinct components of their work says nothing about the dynamic relationship between the attitudes when one component is significantly changed.

Graen (1969) differentially rewarded two experimental groups, one with money and the other with recognition and achievement, and compared them with a control group. The analysis of the manipulations indicated that the group rewarded with money expressed significantly greater satisfaction with "salary" than either the control group or the recognition and achievement group. Likewise, the group receiving recognition and achievement expressed significantly greater satisfaction with "achievement feedback" and "recognition" than either the money or control groups. On measures of "accomplishment", "responsibility", "policies and practices", and "working conditions" the three groups did not differ significantly. However, it should be noted that even though the differences were not statistically significant, the means of these four measures were more positive in both experimental conditions than in the control condition.

In the individual-organic approach, job satisfaction is defined as a general condition of the individual in the absence of specified external referents. Dabas (1958), for example, has reported a "generalized overall attitude factor" (GOA) in addition to the various "sub-general factors" and "group factors" which were related to specific components

of work, such as working conditions, financial rewards, confidence in management, fringe benefits, and fellow workers. The GOA was explained by the "tendency for feelings or emotions aroused by one thing to spread to something else. Many times, a thing that appears trivial creates quite an emotional disturbance because of this expansion in emotional attachment [p. 219]."

An important question which is raised here concerns the manner in which a reinforcer influences attitudes of job satisfaction. Does reinforcement produce an undifferentiated halo effect, or does it predictably influence only specific attitudes of job satisfaction? The present study attempted to manipulate financial rewards in a controlled setting and examine the resulting changes in work related attitudes across two periods of reinforcement.

Method

Subjects

The Ss were 135 undergraduate students, both male and female, enrolled in a junior-level business course. Students were enlisted as volunteers to score Closure Flexibility Tests for which they would be paid at least $1.00 per hour.

Procedure and Task

The Ss reported to the laboratory in groups of seven or eight individuals (depending on whether someone forgot) and were met by E who introduced himself as a graduate assistant who would be their supervisor.

When all Ss had arrived and had familiarized themselves with the Closure Flexibility Test booklet, each was told that his task would be to score the tests at his work station. The Ss were also told that the tests had been completed by employees in a paper mill. All of the Closure Flexibility Test booklets had in fact been marked according to 24 patterns of responses. Therefore, the difficulty of the task was controlled and the correct responses were known in advance.

All Ss were told that they would be paid a minimum of $1.00 per hour but that the best performers in terms of quality and quantity would receive an additional $1.00 bonus. The Ss were told "We've set performance standards for both the first and second hour. We think they are realistic standards and you each have about a 50-50 chance of reaching them. Those who make the standard either hour will get $2.00 for that hour and the others will get $1.00." Thus all Ss were led to believe that there was a 50-50 chance of receiving the bonus.

The Ss were then taken into the lab where the task of scoring the

test booklets was explained to them. Diagrams on a blackboard showing an answer sheet that was partially marked were used to help the Ss understand the instructions.

After the Ss began the task, the experimenter returned every 10 minutes to bring additional booklets and collect the booklets and answer sheets which had been completed.

At the end of the hour, the experimenter stopped the Ss and asked them to indicate on four 7-point scales an estimate of their quantity, quality, and overall performance, and probability of receiving a reward. Every third group was assigned to the reward-uncertain condition. The experimental manipulations of financial reward were then performed, which consisted of the following statements and payments.

Reward Manipulation

"I have collected the tests as you have scored them and selected a sample from each of you to check your work. I've used a rather complicated index which combines quantity and quality of performance into one index.

Reward and Nonreward: "Based upon this index four of you will receive $2.00 and the other four will get $1.00. The four winners are . . . and the four losers are . . ." Ss were then paid and asked to mark a questionnaire. The monetary bonus, however, was in fact randomly distributed to half of the Ss regardless of their performance.

Reward-uncertain: "I need some time to look at the last set of tests before I can decide how much you'll each receive. While you're waiting I'd like you to fill out this questionnaire, then you'll get paid." After the questionnaires were completed, E said he still needed more

time and assurred them that they would be paid later. The Ss were paid after completing the questionnaire at the end of the second hour.

Dependent Measures

The performance score for each S was the total number of rows of figures in the Closure Flexibility Test booklets which the S scored correctly. This was determined by subtracting the number of errors from the total number of rows scored. Thus performance scores were a measure of both quality and quantity.

The questionnaire which the Ss were asked to complete was a self-report measure of satisfaction developed by Scott and his colleagues (Scott, 1967; Scott and Rowland, 1970). The format of the self-report measure was a semantic differential questionnaire as shown below. Bipolar adjective pairs were set against six concepts: Me At This Task, My Pay, The Supervisor, My Fellow Workers, The Task, and Working Conditions. The responses to each scale were scored from one to seven with seven assigned to that response which appeared to indicate the most preferred condition. A factor score was computed for each S by averaging the S's responses to each of the sca es previously found to comprise that factor.

ME AT THIS TASK

	Extremely	Quite	Slightly	Neither one nor the other	Slightly	Quite	Extremely	
Appreciated	____	____	____	____	____	____	____	Unappreciated
Bored	____	____	____	____	____	____	____	Interested
Efficient	____	____	____	____	____	____	____	Inefficient

Thirteen factor scores were computed for each S. The General Affective Tone score was obtained by averaging the S's responses to the following bipolar scales set against the concept, Me At This Task: appreciated-unappreciated, rewarded-penalized, satisfied-dissatisfied, and encouraged-discouraged. The remaining self-report measures and the semantic scales defining each factor were as follows--General Arousal (Me At This Task): calm-excitable, serene-high strung, and relaxed-tense; Personal Competence (Me At This Task): efficient-inefficient, cooperative-uncooperative, productive-unproductive, valuable-worthless, reliable-unreliable, useful-useless, effective-ineffective, and important-unimportant; Satisfaction With Pay (My Pay): pleasing-annoying, reasonable-unreasonable, superior-inferior, and rewarding-penalizing; Supervisor Consideration (My Supervisor): fair-unfair, reasonable-unreasonable, courteous-discourteous, thoughtful-thoughtless, agreeable-disagreeable; Supervisor Sociability (My Supervisor): friendly-unfriendly, talkative-quiet, and sociable-unsociable: Supervisor Emotionality (My Supervisor): relaxed-tense and calm-excitable; Supervisor Competence (My Supervisor): effective-ineffective, positive-negative, skillful-bungling, decisive-indecisive, strong-weak, and active-passive; Interpersonal Attractiveness (My Fellow Workers): sociable-unsociable, helpful-obstructive, pleasant-unpleasant, unselfish-selfish, and cooperative-uncooperative; Fellow Worker Emotionality (My Fellow Workers) unemotional-emotional, relaxed-tense, and calm-excitable; Task Attractiveness (My Task): attractive-repulsive, exciting-dull, good-bad, interesting-boring, superior-inferior, and wholesome-unwholesome; Task Complexity (My Task): easy-difficult, simple-complex, and varied-routine; Satisfaction with Working Conditions (Working Conditions): soothing-aggravating, pleasant-unpleasant, com-

fortable-uncomfortable, and colorful-colorless.

After completing the semantic differential scales, the Ss were invited to take a five minute break. After this short break, the Ss were given more test booklets and asked to continue scoring them for another hour. The procedure at the end of the second hour was identical to that at the end of the first hour. First, the Ss were asked to estimate their perceived performance and probability of reward on the four scales. Then the reward manipulations were administered and they were asked to fill out the semantic differential questionnaire. The monetary bonus was distributed to the same Ss who received it at the end of the first hour.

After the questionnaires were filled out the second time, Ss were debriefed. They were told that all rewards were given at random and since it was only by chance someone received more than the others, the winners were asked to share their rewards with the losers, although the E did not insist that they do so.

Results

An analysis of variance among the S's responses on each dependent measure was computed as a 1 X 3 fixed effects design. The F-ratios and significance levels for each of the dependent variables are presented in Tables 1 and 2. When a main effect of reward was observed, nonorthogonal planned comparisons[1] were tested to determine the direction and significance of the effect (as suggested by Hays, 1963, pp. 462-468). The means for the various conditions for both hours are shown in Table 3.

Insert Table 1, Table 2, and Table 3

Since the rewards had been randomly administered at the end of the first hour, both the expectation of reward scores and the performance scores were not significantly different in the three conditions. At the end of the second hour, however, those who had been rewarded earlier had a higher expectation of reward, and those who had not been rewarded estimated a lower probability of being rewarded the second time. In the reward-uncertain condition the expectation of reward scores were approximately the same both hours.

During the second hour, however, the expectation of reward scores were seemingly unrelated to the performance scores. The Ss in both the reward <u>and</u> nonreward conditions performed significantly better than the Ss in the reward-undertain condition. The performance differences during the second hour were consistent with numerous studies which have illustrated the superiority of learning under conditions where the individual is provided with feedback on performance. When the rewards were administered, the Ss were essentially told that their

performance was above or below average. Seemingly, this feedback was a form of reinforcement and/or incentive which increased the performance of both the rewarded and nonrewarded individuals more than those in the reward-uncertain condition. Similar increases in subsequent performance following experimentally controlled conditions of success or failure as compared to a neutral condition have been reported by Mandler and Sarason (1952) and Lugas (1952) for low anxiety individuals. (Individual measures of anxiety were not obtained in this study, but the mean General Arousal scores indicated that all three groups were approximately at a neutral level of arousal). Finding greater performance among both the rewarded and nonrewarded groups is also consistent with Atkinson's (1964) theory of achievement motivation if one accepts Atkinson's assumption that most college students are more highly motivated to achieve success than to avoid failure. If the probability of success is greater than .50, Atkinson (1957, pp. 368-369) predicted that failure should increase motivation until the probability of success has dropped to .50. In this study, the expectation of reward scores of both the rewarded and nonrewarded groups were greater than 4.00 which represented the .50 probability of being rewarded.

Among the 13 self-report measures, there were significant effects of reward on nine of them at the end of the first hour. With both the General Affective Tone and Satisfaction with Pay scores there was a significant transitive relationship between the means: the Reward mean was significantly greater than the Reward-uncertain mean, which was significantly greater than the Nonreward mean (R > RU > NR). With five of the other dependent variables (Perceived Performance, Supervisor

Competence, and Interpersonal Attractiveness) the mean scores of the Reward and Reward-uncertain conditions were not significantly different but the means of both conditions were significantly greater than the mean scores of the Nonreward condition (R=RU>NR). Similarly, the mean Task Attractiveness score of rewarded Ss was significantly greater than the mean scores of Ss in the nonreward condition. In the reward-uncertain condition, however, the Task Attractiveness mean was between the reward and nonreward means and did not differ significantly from either.

Supervisor Emotionality was the only dependent variable on which the effects of the reward manipulations deviated from the previous pattern. The reward mean was not significantly different than the nonreward mean, but both of them were significantly <u>less</u> than the reward-uncertain mean. Of the four remaining dependent variables (General Arousal, Fellow Worker Emotionality, Task Complexity, and Satisfaction with Working Conditions) the mean scores in the three reward conditions were not significantly different.

At the end of the second hour, the 13 self-report measures were generally lower than the first hour, but the effects of the reward conditions were about the same. The only significant deviation the second hour was among the Fellow Worker Emotionality scores where the Ss in the reward-uncertain condition indicated that their fellow workers were less tense and emotional than the Ss in the reward and nonreward conditions. The mean Fellow Worker Emotionality scores followed the same pattern both the first and second hour, but the

differences were only significant the second hour.

Discussion

As a result of the random reward manipulations giving $2.00, $1.00, or delaying payment until after the attitude assessment, there were significant effects of reward on 10 of the 13 attitudinal measures. Since the level of pay was the independent variable one would naturally anticipate finding significant effects of reward on Satisfaction with Pay. Likewise, General Affective Tone and Personal Competence were closely related to the differential rewards and would be expected, consequently, to be influenced by the reward conditions. However, the referents of the other attitudes were not experimentally manipulated. The fellow workers, the supervisor, the task, and working conditions were all held constant among the three reward conditions. Nevertheless, except for the Supervisor Emotionality and Fellow Worker Emotionality scores, the other eight dependent measures were influenced by the experimental conditions in a similar manner both hours. The attitudes in the reward condition were more positive than or equal to the attitudes in the reward-uncertain condition and attitudes in both the reward and reward-uncertain conditions were significantly more positive than in the nonreward condition.

A critical concern is whether the results of the reward manipulations can be parsimoniously explained on the basis of a generalized response set among the respondents. This issue essentially questions the discriminant validity of the semantic differential factor scores used to describe the subjects' reactions to the different experimental conditions. Previous research, however, seemed to justify the use of

the instrument. In addition to the research conducted on the use of semantic differential scales in general (Osgood, Suci, and Tannenbaum, 1957), the specific instrument used here has been examined with respect to the generality and significance of the semantic differential factor scores as measures of morale in industry (Scott, 1967, Scott and Rowland, 1970) and, in part, it has also been used in laboratory experiments (Cherrington, 1970; Cherrington and Cherrington, 1973; Cherrington, Reitz, and Scott, 1971).

Further evidence of the discriminant validity of the semantic differential measures comes from the Supervisor Emotionality and Fellow Worker Emotionality scores. The Superior Emotionality scores, for instance, differed from the above pattern (R > RU > NR) since the highest scores for both hours (indicating a more calm and relaxed supervisor) were reported by the Ss in the reward-uncertain condition. The deviation of the Supervisor Emotionality scores from the typical reward pattern was not surprising since the Ss in the reward-uncertain condition were told that their rewards had not been determined and the supervisor needed more time. Hence, it was anticipated that the supervisor would be reported as more relaxed and calm in the reward-uncertain condition. Thus, the Supervisor Emotionality scores as well as the Fellow Worker Emotionality scores, refuted the hypothesis that the reinforcement produced an undifferentiated halo effect on the attitudes of job satisfaction.

Furthermore, the effects of the reward manipulations for both the first and second hour were remarkably consistent. Therefore, one can assume that the reinforcement effects were reliable and proceed to ask why the reward conditions influenced certain attitudinal measures, e.g.,

Supervisor Consideration and Task Attractiveness, and did not influence others, e.g., General Arousal and Task Complexity.

According to Thorndike's (1933) spread of effect, the bolstering effect of a reward could spread forward and backward in time influencing the stimulus-response connections of the system. This spreading out was postulated to occur in a systematic fashion "influencing one most, its nearest neighbors next most, and so on [p. 67]." Which S-R connections are the "nearest neighbors" is not well defined but seems to be determined by the extent to which discriminable stimuli within the conditioning environment are associated with an unconditioned stimulus.

A study by Griffitt and Guay (1969) found that the affect elicited by reinforcing stimuli influenced the subject's evaluations of a wide variety of stimulus objects associated with that affect, similar to the results of the present study. Their Ss evaluated the same experiment, experimenter, apparatus, TAT pictures, and unseen persons more positively when associated with positive stimulus conditions that when associated with negative conditions. They concluded that such differential evaluations are "clearly not solely based on a 'logical' and 'rational' process of examination of the positive and negative attributes of the stimuli in question but to a large extent on the less rational basis on conditioned affect [p. 2]."

In a follow-up study Hughes (1969) questioned the extent to which this "irrational evaluation" would occur if the stimulus objects were not only present in the situation but also provided direct reinforcement. The stimulus objects were two confederate judges who administered positive or negative reinforcement either alone or together. Hughes found that the reinforcement provided by one stranger had no effect on the

evaluation of a second reinforcing stranger regardless of whether or not both were physically present during the two reinforcement sequences. He also suggested that it is possible that the susceptibility of a stimulus to conditioned affect is altered by the extent to which that stimulus is perceived as a responsible reinforcer. That is, the evaluation of a previously neutral stimulus is determined by the reinforcers with which it is associated, while the evaluation of a reinforcing stimulus is determined by the reinforcement with which it is responsible. Hughes postulated that "affect will be conditioned to multiple objects (responsible and nonresponsible) to the extent that the subject does not isolate the source of his affect. To the degree that the subject is unable to identify the source of his affect, all stimuli present and discriminable at the time of reinforcement will be treated as responsible sources and will hence be susceptible to conditioned affect [p. 17]."

Hughes' concept of a responsible reinforcer is one possible explanation for why the reward manipulations in the present study influenced the Supervisor Competence, Supervisor Consideration, and Supervisor Sociability scores. Since the supervisor was the one who determined how the rewards would be allocated, he was identified as a "responsible" reinforcing stimulus. This concept also suggested why there were differences in the Interpersonal Attractiveness and Task Attractiveness scores, since the co-workers and task were neutral stimuli closely associated with the reinforcing stimuli. (Since there was a form of intragroup competition, one's rewards were determined in part by his fellow workers.) The General Arousal, Supervisor Emotionality, and Fellow Worker Emotionality scores, however, were

not measures of affect, but were measures of arousal. The effects of reward on these arousal measures were understandable, as mentioned earlier. The remaining variables, Task Complexity and Satisfaction with Working Conditions, however, were not influenced by the reward manipulations.

According to Hughes' concept of a responsible reinforcer, one would presume that the Task Complexity and Satisfaction with Working Conditions scores were not influenced by the reward conditions because the Ss were able to isolate the source of their affect, which source had nothing to do with the complexity of the task nor the attractiveness of the working conditions. Consequently, the complexity of the task and the attractiveness of the working conditions were not associated with the reinforcement. This explanation appears rational; but it cannot be empirically supported or refuted from the data presented here.

An internal mediating mechanism has been postulated by Byrne and Clore (1970) to explain the processes by which a stimulus that has reinforcing properties can determine evaluative responses toward other stimuli through association with them. Byrne and Clore have defined an internal construct called an <u>implicit affective response</u> which they have utilized to describe the processes of interpersonal attraction. The implicit affective response is conceptualized as mediating the relationship between the conditioned stimulus (CS) and subsequent evaluative responses. The acquisition and extinction of the implicit affective response is determined by the principles of classical conditioning. They proposed that any stimulus with reinforcement properties

functions as an unconditioned stimulus (UCS) for an implicit affective response. Such affect is assumed to fall along a continuum characterized as pleasant-unpleasant. The UCS is any reinforcing stimulus (which may itself be a conditioned stimulus from prior learning), the CS is any discriminable stimulus, including another person, and the evaluative response includes verbal responses describing one's assessment of the CS, various types of choice behavior, as well as approach and avoidance reactions to the CS.

The construct of an implicit affective response does not adequately explain the results reported in this experiment (nor is it refuted). There were not enough periods of reinforcement to classically condition an implicit affective response. In fact, the attitude measures which were obtained immediately after the rewards were administered at random exhibited significant reward effects at the end of the first hour. The number of trials and time required to classically condition a response is not a fixed constant, but is influenced by several factors, e.g., the number of distractions present, the kind of instructions given to the subjects, the intensity of the stimuli employed, the kind of response being conditioned, etc. One association of a UCS with a CS is obviously not sufficient.

Bindra (1968) has postulated an internal construct called a "central incentive-motivational state." Bindra's propositions are based upon a neuropsychological interpretation of incentive-motivational stimuli. According to him, incentive-motivational stimuli (contrasted with drive-induced stimuli) facilitates the perception of relevant sensory input (attention). Provided that a certain minimum level of drive is present, incentive-motivational stimuli

can facilitate, and are necessary for facilitating, the occurrence of particular instrumental responses. The facilitation of instrumental responding occurrs from the creation of general central states that may be neither response-specific nor drive-specific.

At least two central states have been hypothesized by Bindra: a positive incentive-motivational state (PIMS) and a negative incentive-motivational state (NIMS). The PIMS, it was suggested, promotes the neural organization of a variety of appetitive environmental rejecting response tendencies, such as withdrawal and escape. Scott and Rowland (1970) have suggested that these two central states possess affective as well as arousal properties. After a brief analysis of various positive and negative reinforcers frequently found in a work environment, Scott and Rowland suggested that "a central motivational state becomes conditioned to stimulus configurations in the work surround associated with the occurrence of positive and negative reinforcers. This central state may facilitate the acquisition and performance of a wide variety of responses in addition to those specifically associated to the reinforcers [p. 582]." For an individual who is positively reinforced in an organizational setting they suggest a PIMS will become classically conditioned to that setting and will be evoked by various stimulus configurations in it. "Possibly a PIMS will result in a selective attention to organizational stimuli, most of which the individual will perceive either as positive reinforcement or discriminative cues leading to the occurrence of rewards whether, objectively, they are or not [p.582]." Likewise, a NIMS will become conditioned to an organizational setting by the occurrence of negative reinforcement or the lack of positive reinforcement (a "time out"

from positive reinforcement").

More operationally, Scott (1967) and Scott and Rowland (1970) have developed quantified measures of job satisfaction (from which the attitude measures used here were obtained) using factor-analytically developed semantic differential scales. Scott and Rowland have suggested that responses to the first two factors from the Me At Work section, General Affective Tone and General Arousal, reflect the individual's description of his past reinforcement history which has led to a conditioned PIMS or NIMS. Additionally, they speculate that significant organizational reinforcers (e.g., one's pay, company benefits and supervisor) and, therefore attitudes toward them, would influence the central state indirectly measured by the Me At Work section. This implies that one would expect to find positive correlations between General Affective Tone and other affective factors such as Task Attractiveness, Supervisor Sociability, etc. which have, in fact, been reported by Scott and Rowland (1970, p. 584-586). They caution, however, against directly relating the General Arousal factor to the central state since an NIMS could lead to either high or low arousal and either increased general activity or a decrement in general activity. This suggests why, in the present study, the reward manipulations did not influence the General Arousal scores.

According to Scott and Rowland (1970) one effect of a PIMS or NIMS is to influence an individual's perception of the environment by <u>selective attention</u> to positive or negative stimuli. This explanation does not explain the data presented here. In the present experiment the rewards were given after the task and just prior to marking the semantic differential questionnaire. Therefore, the reward condi-

tions could not have caused selective attention or perception of the environmental stimuli during the experiment because rewards were randomly administered at the end of the hour.

Other considerations of the PIMS or NIMS, however, are consistent with the data presented here. In addition to suggesting that the central state facilitates relevant sensory input via selective attention to positive or negative stimuli, Scott and Rowland have also postulated that when an individual is in an organizational environment which elicits a PIMS he will be active and attracted to the organization and will display a variety of appetitive or approach behaviors. Conversely, an individual in an organizational setting which evokes an NIMS would feel dissatisfied and would display a variety of aversive, rejecting behavioral tendencies including both operant and elicited aggression and various forms of withdrawal, e.g., absenteeism, tardiness, visits to the medical center, and leaving the organization altogether.

Prior to the time an individual comes to the experiment he has experienced various reinforcements over a period of time adequate to condition a PIMS and NIMS. A variety of conditioned positive reinforcers such as money, promotions, and social acceptance which are frequently made contingent upon certain specified behaviors has most likely been experienced by every individual. Similarly, every individual has probably experienced a variety of conditioned negative reinforcers such as discharge, layoff, demotion, criticism, and rejection which are frequently contingent upon behaviors judged to be dysfunctional to organizational goals. Consequently, the experimental reward conditions in the present study merely <u>elicited</u> either a positive or negative central state which facilitated certain instru-

mental evaluative responses.

Any discriminable stimuli closely associated with or "responsible" for a reinforcement could serve as conditioned incentive-motivational stimuli and, hence, elicit a positive or negative central state. However, other stimuli which have not been classically conditioned to the central state in the S's previous conditioning history are not influenced by the central state when it is elicited. At this point the discussion is quite similar to the earlier discussion of a responsible reinforcer suggested by Hughes.

The above explanation suggests that the significant effects of reward on certain variables such as Supervisor Competence, Task Attractiveness, and Interpersonal Attractiveness were due to the previous association of those variables with previous reinforcement. These conclusions which are based upon the hypothetical functioning of a central incentive-motivational state are similar to the conclusions of Highes (1969) based upon the concept of a "responsible" reinforcer and Thorndike's spread of effect. Bindra's construct of a central state, however, is more elegant since its development is taken from a neuropsychological interpretation of incentive-motivational stimuli.

The reinforcement used in the present study was a extrinsic monetary reward. Recently there have been some attempts to distinguish the effects of intrinsic and extrinsic rewards. Deci (1971), for example, has reported that giving reinforcement to subjects in the form of money for doing a task seemed to reduce their generalized affect or intrinsic interest in what they were doing rather than having a generalized increase in overall affect. This notion was not supported by the data presented here. Furthermore, the antagonistic effects of extrinsic and intrinsic rewards postulated by Deci are inconsistent with the theoretical reviews pre-

sented here.

In summary, the postulate that a central incentive-motivational state can be conditioned by an organizational reinforcer and subsequently influence attitudes regardin various other organizational stimuli was generally substantiated, especially for stimuli associated with affective feelings regarding a responsible reinforcing stimulus. This does not imply that reinforcement produces an undifferentiated halo effect. On the contrary, studies including the present one have demonstrated that people can reliably discriminate among various aspects of their environment and report them. This was evidenced in the present study by the Ss responses on the Supervisor Emotionality variable.

The present study supports the notion that there is a central incentive-motivational state which can be conditioned by organizational reinforcers and which in turn influences an individual's self-descriptions of the work environment. Thus we may speculate that an individual at a given time can reliably report an assortment of positive and negative attitudes regarding various work-related aspects. If this individual is positively reinforced with significant organizational reinforcers over a period of time a PIMS will become conditioned to that setting and will be evoked by various stimulus configurations. The PIMS will possibly result in selective attention to organizational stimuli, most of which the individual will perceive either as positive reinforcers or discriminative cues leading to the occurrence of rewards. This individual is then likely to report significantly more positive attitudes regarding the various work-related aspects. There will most likely still be the same general distribution of positive and negative attitudes, but the distribution of those attitudes which have been

associated by classical conditioning to the PIMS will have moved to a more positive level.

FOOTNOTES

1. The rationale which favored the use of non-orthogonal planned comparisons rather than orthogonal planned comparisons or post-hoc comparisons was dictated by the questions asked about the data. It was desirable to test for a transitive relationship, R > RU > NR, and it is not possible to construct orthogonal comparisons to do so. Since there were only three experimental conditions, however, the critical region could not have been effected materially and the non-orthogonal planned comparisons were somewhat more sensitive than post-hoc comparisons would have been.

Table 1

Analysis of Variance : First Hour

Variable	MS Reward df=2	MS Error df=132	F	p
Performance	5,503	5160	1.07	ns
General Affective Tone	20.11	.62	32.30	.001
General Arousal	.52	1.33	.39	ns
Satisfaction with Pay	42.04	.61	69.40	.001
Personal Competence	3.94	.51	7.70	.001
Supervisor Consideration	3.59	.47	7.53	.001
Supervisor Sociability	2.68	.85	3.15	.05
Supervisor Emotionality	4.54	1.02	4.46	.025
Supervisor Competence	3.40	.45	7.58	.001
Interpersonal Attractiveness	1.81	.32	5.72	.005
Fellow Workers Emotionality	1.21	.63	1.93	ns
Task Attractiveness	4.12	.78	5.38	.025
Task Complexity	1.17	.74	1.58	ns
Satisfaction with Working Conditions	.80	.75	1.07	ns
Expectation of Reward	.46	1.31	.36	ns

Table 2

Analysis of Variance: Second Hour

Variable	MS Reward df=2	MS Error df=132	F	p
Performance	25,021	8,152	3.07	.05
General Affective Tone	41.20	.76	53.81	.001
General Arousal	1.69	1.01	1.68	ns
Satisfaction with Pay	73.05	.78	92.60	.001
Personal Competence	6.51	.58	11.12	.001
Supervisor Consideration	10.64	.54	19.40	.001
Supervisor Sociability	8.23	1.06	7.72	.001
Supervisor Emotionality	4.85	.97	4.97	.01
Supervisor Competence	3.51	.53	6.59	.005
Interpersonal Attractiveness	1.77	.35	5.04	.01
Fellow Workers Emotionality	2.22	.63	3.49	.05
Task Attractiveness	7.01	.76	9.20	.001
Task Complexity	.12	.74	.16	ns
Satisfaction with Working Conditions	1.19	.78	1.52	ns
Expectation of Reward	4.71	1.28	3.69	.05

Table 3

Mean Scores for the Reward, Nonreward and Reward-uncertain groups: First and Second Hour

Variable	Means: First Hour				Means: Second Hour			
	Reward	Nonreward	Reward-uncertain	p[a]	Reward	Nonreward	Reward-uncertain	p[a]
	n=45	n=45	n=45		n=45	n=45	n=45	
Performance	304.0	303.4	281.1	ns	433.0	435.8	393.6	.05
General Affective Tone	5.16	3.83	4.63	.001	5.11	3.25	4.56	.001
General Arousal	3.85	4.03	4.03	ns	4.13	4.40	4.51	ns
Satisfaction with Pay	5.61	3.68	4.82	.001	5.62	3.09	4.60	.001
Personal Competence	5.39	4.80	5.15	.001	5.14	4.40	4.95	.001
Supervisor Consideration	5.80	5.37	5.91	.001	5.56	4.77	5.65	.001
Supervisor Sociability	5.00	4.60	5.03	.05	4.82	4.25	5.08	.001
Supervisor Emotionality	5.21	5.01	5.63	.025	5.22	4.85	5.51	.01
Supervisor Competence	5.29	4.92	5.45	.001	4.92	4.57	5.12	.005
Interpersonal Attractiveness	4.96	4.62	4.98	.005	4.98	4.63	4.97	.01
Fellow Worker Emotionality	4.24	4.28	4.54	ns	4.25	4.24	4.63	.05
Task Attractiveness	3.79	3.18	3.55	.025	3.66	2.88	3.34	.001
Task Complexity	4.12	3.89	4.20	ns	4.17	4.11	4.07	ns
Satisfaction with Working Conditions	5.00	4.79	5.04	ns	4.91	4.67	4.98	ns
Expectation of Reward	5.42	5.22	5.28	ns	5.60	4.95	5.33	.05

a probability of significant difference between the means

REFERENCES

Atkinson, J.W. Motivational determinants of risk-taking behavior. Psychological review, 1957, 64, 359-372.

Atkinson, J.W. An introduction to motivation. Princeton, New Jersey: Van Nostrand Co. Inc., 1964

Bindra, D. Neuropsychological interpretation of the effects of drive and incentive-motivation on general activity and instrumental behavior. Psychological review, 1968, 75, 1-22.

Byrne, D. and Clore, G.L. A reinforcement model of evaluative responses. Personality: An international journal, 1970, 1, 103-128.

Cherrington, D.J. The effects of competition and financial rewards on satisfaction and task performance. An unpublished doctoral dissertation, Indiana University, 1970.

Cherrington, D.J., and Cherrington, J.O. Appropriate reinforcement contingencies in the budgeting process. Paper presented at the Empirical Research in Accounting Conference, Chicago, May, 1973.

Cherrington, D.J., and Reitz, H.J., and Scott, W.E. Effects of contingent and noncontingent reward on the relationship between satisfaction and task performance. Journal of applied psychology, 1971, 55, 531-536.

Dabas, Z.S. The dimensions of morale: An item factorization of the SRA Employee Inventory. Personnel psychology, 1958, 11, 217-234.

Deci, E.L. Effects of externally mediated rewards on intrinsic motivation. Journal of personality and social psychology, 1971, 18, 105-115.

Graen, G. Instrumentality theory and work motivation: Some experimental results and suggested modifications. Journal of applied psychology, 1969, 53 (2, Pt. 2).

Griffitt, W. and Guzy, P "Object" evaluation and conditioned affect. Journal of experimental research in personality, 1969, 4, 1-8.

Hays, W.L. Statistics for psychologists. New York: Holt Reinhart and Winston, 1963.

Hilgard, E.R. Theories of learning. New York: Appleton, 1956.

Hinrichs, J.R. A replicated study of job satisfaction dimensions. Personnel psychology, 1968, 21, 479-503.

Hughes, R.L. "Object" evaluation: A reinterpretation of affect conditioning in the reinforcement model of attraction. Unpublished master's thesis, University of Texas. Cited in D. Byrne, The attraction paradigm, New York: Academic Press, 1971.

Kahn, R.L. Productivity and job satisfaction. Personnel psychology, 1960, 13, 275-287.

Katz, D., Maccoby, N., and Morse, N.C. Productivity, supervision, and morale in an office situation. Ann Arbor: University of Michigan Press, 1950.

Lott, B.E. and Lott A.J. The formation of positive attitudes toward group members. Journal of abnormal and social psychology, 1960, 61, 297-300.

Lucas, J.D. The interactive effects of anxiety failure and interserial duplication. American journal of psychology, 1952, 65, 59-66.

Mandler, G., and Sarason, S.B. A study of anxiety and learning. Journal of abnormal and social psychology, 1952, 47, 166-173.

Marx, M. Spread of effect: a critical review. Genetic psychology monographs, 1956, 55, 119-180.

Osgood, C.E., Suci, G.J., and Tannenbaum, P.H. The measurement of meaning. Urbana, Illinois: University of Illinois Press, 1957.

Postman, L. Rewards and punishments in human learning. In L. Postman, (Ed.), Psychology in the making. New York: Knopf, 1963. Pp. 331-401.

Rosnow, R.L. A delay-of-reinforcement effect in persuasive communication? Journal of social psychology, 1965, 67, 39-43.

Rosnow, R.L. A "spread of effect" in attitude formation. In A.G. Greenwald, T.D. Brock, and T.M. Ostrom (Eds.), Psychological foundations of attitudes. New York: Academic Press, 1968. Pp. 89-107.

Rosnow, R.L. and Russell, C. Spread of effect of reinforcement in persuasive communication. Psychological reports, 1963, 12, 731-735.

Scott, W.A. Attitude change through reward of verbal behavior. Journal of abnormal and social psychology, 1957, 55, 72-75.

Scott, W.E. The development of semantic differential scales as measures of "Morale." Personnel psychology, 1967, 20, 179-198.

Scott, W.E. and Rowland, D. The generality and significance of semantic differential scales as measures of "Morale." Organizational behavior and human performance, 1970, 5, 576-591.

Thorndike, E.L. An experimental study of rewards. Teachers college contributions to education, 1933, No. 580.